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Kleyner

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(54) **CEREAL BAG WITH CRUMB COLLECTOR**

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B65B 51/02	(2006.01)

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USPC 53/170, 393, 410, 416, 449–467, 475, 53/562, 570

See application file for complete search history.

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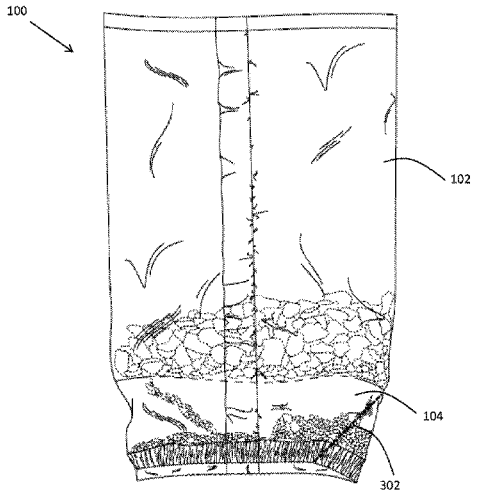
(57) **ABSTRACT**

A bag includes a main compartment and a crumb collector compartment disposed below the main compartment. The bag includes a substantially horizontal non-continuous seal including a plurality of sealed portions and a plurality of open portions disposed between the sealed portions. The substantially horizontal non-continuous seal is disposed between the main compartment and the crumb collector compartment. The bag includes a continuous seal disposed below the crumb collector compartment.

5 Claims, 7 Drawing Sheets



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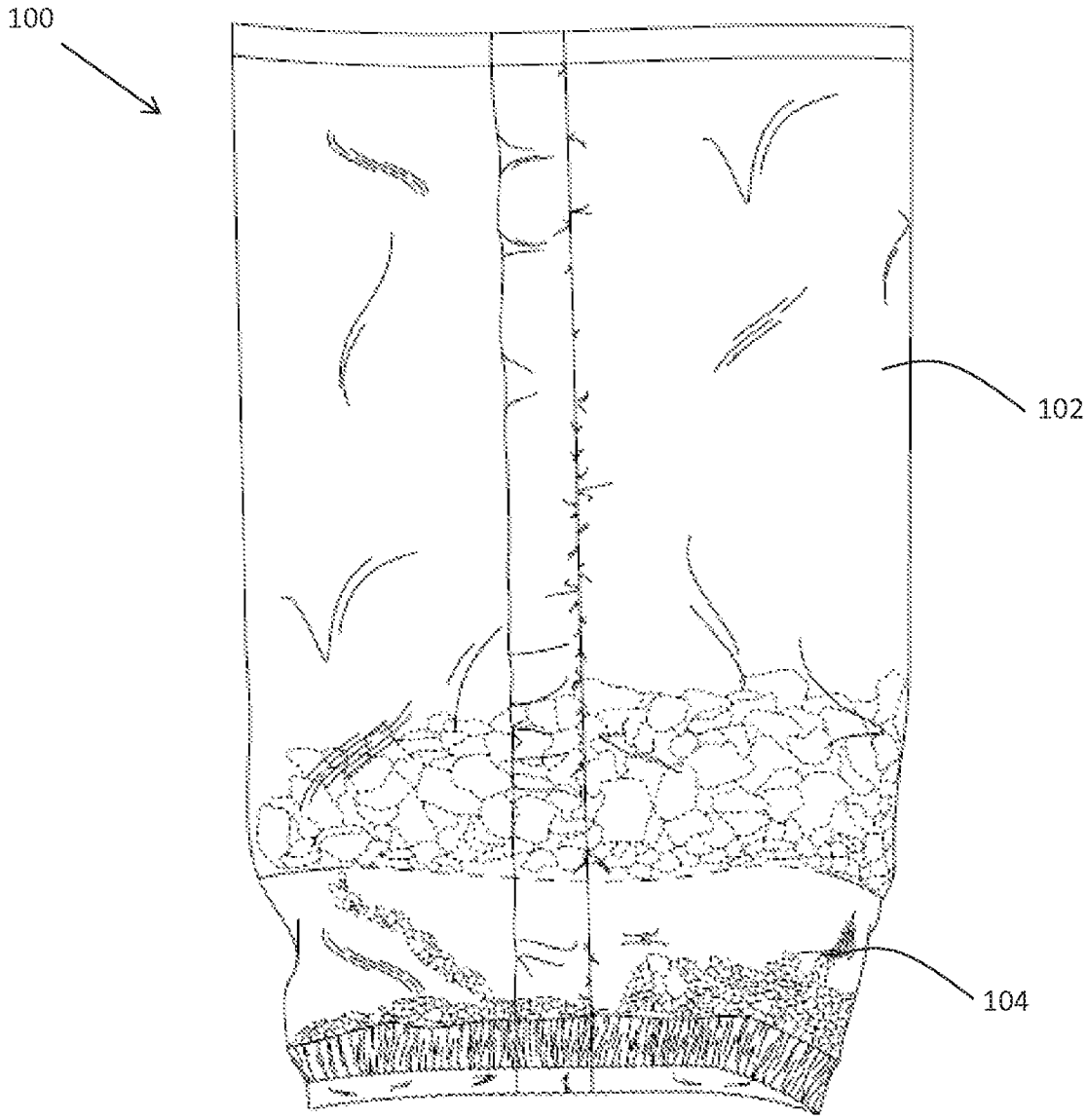

Fig. 1

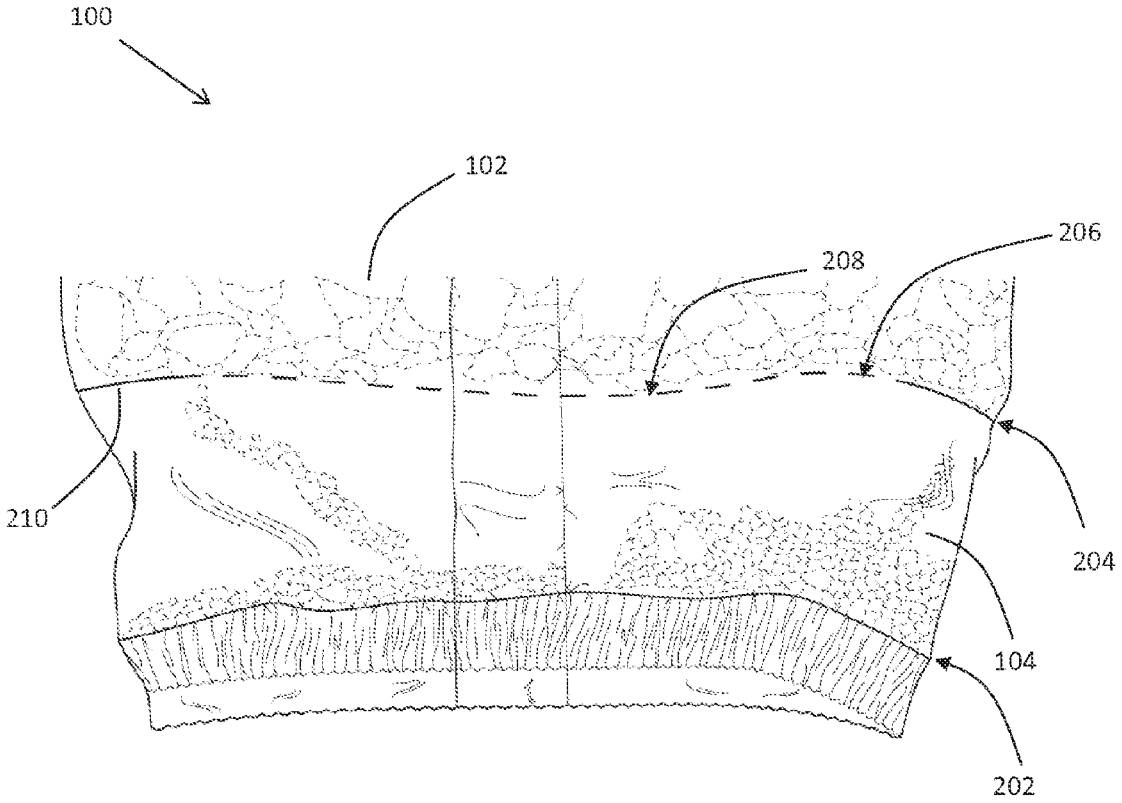

Fig. 2

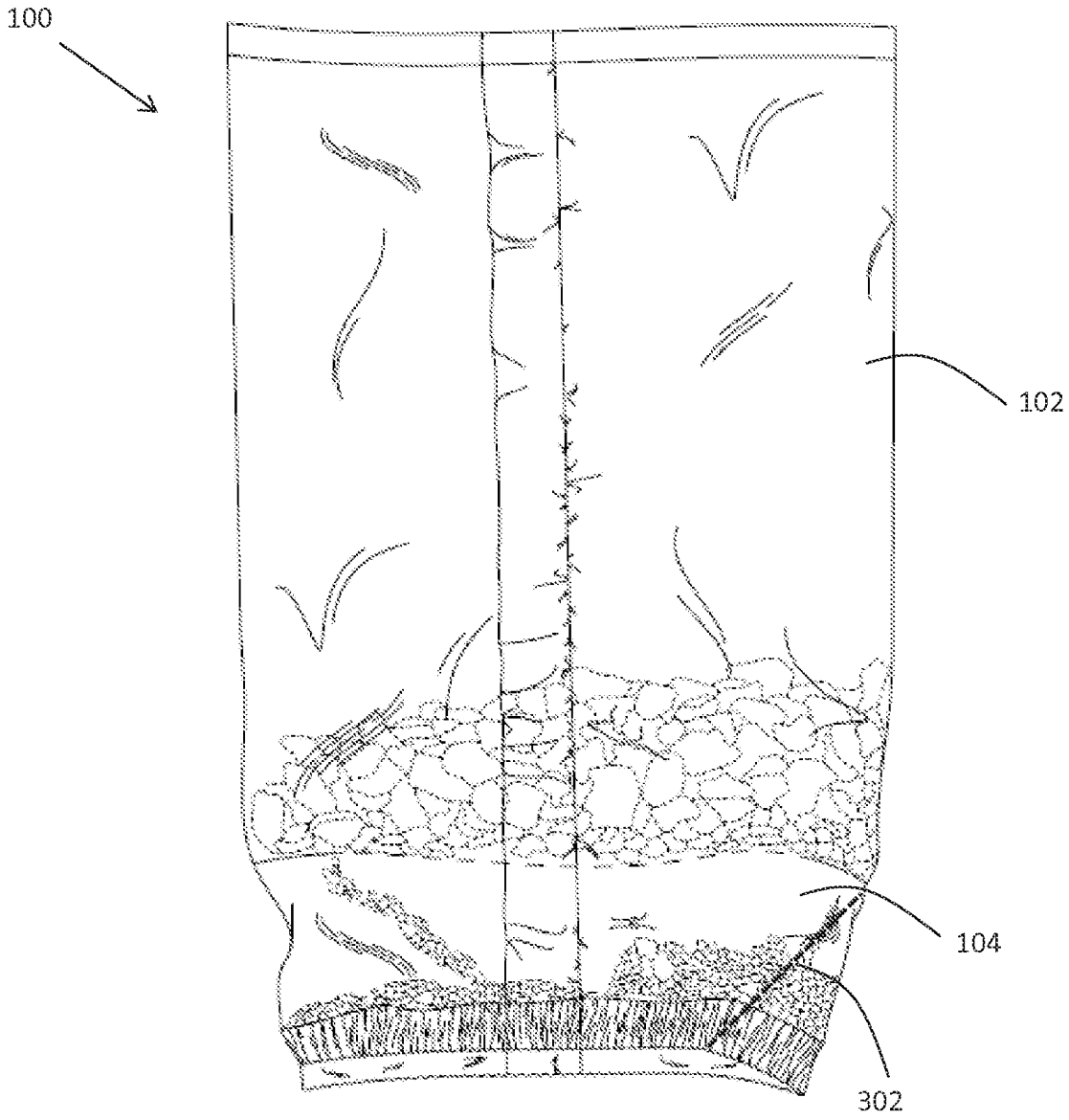

Fig. 3

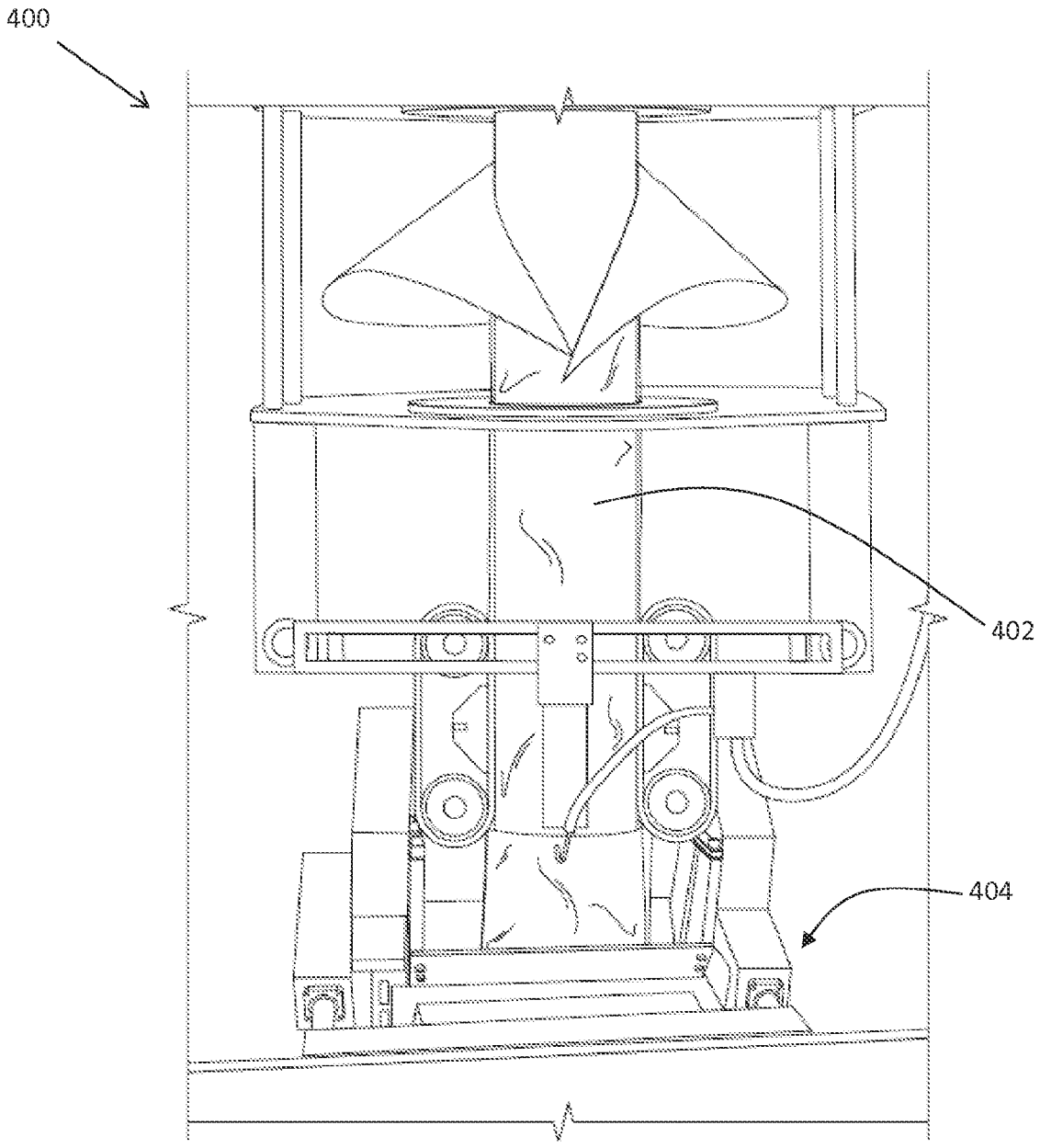

Fig. 4

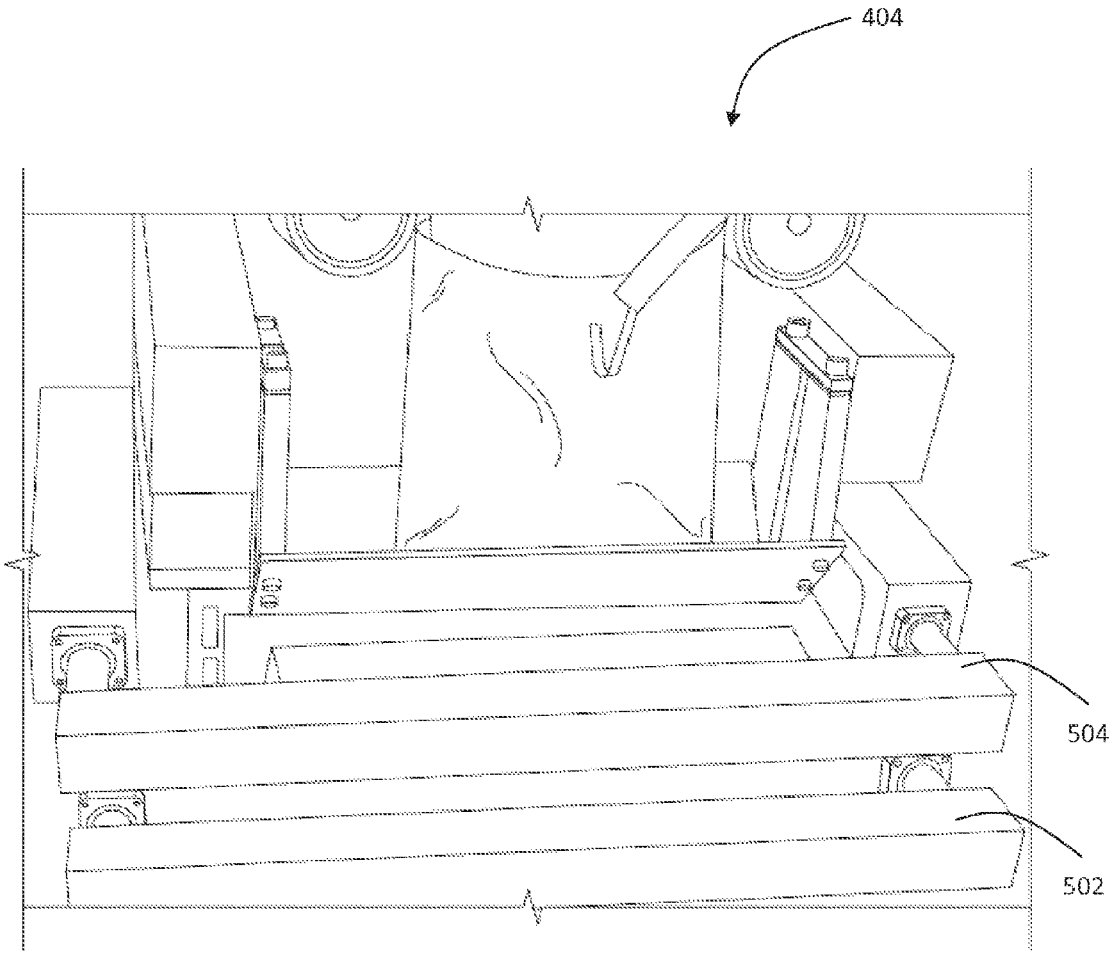

Fig. 5

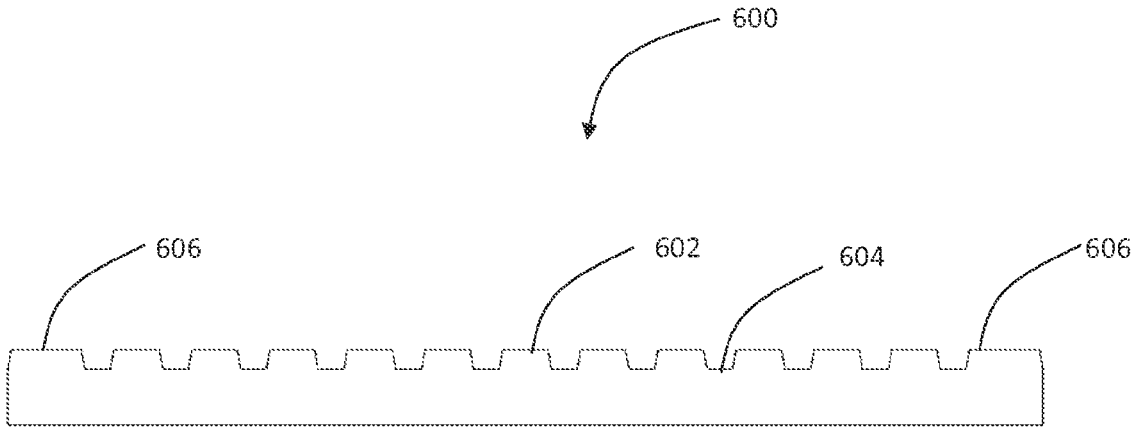

Fig. 6A

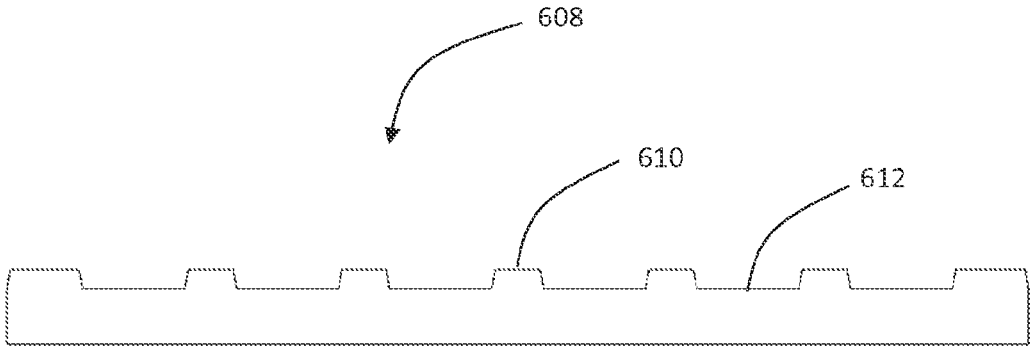

Fig. 6B

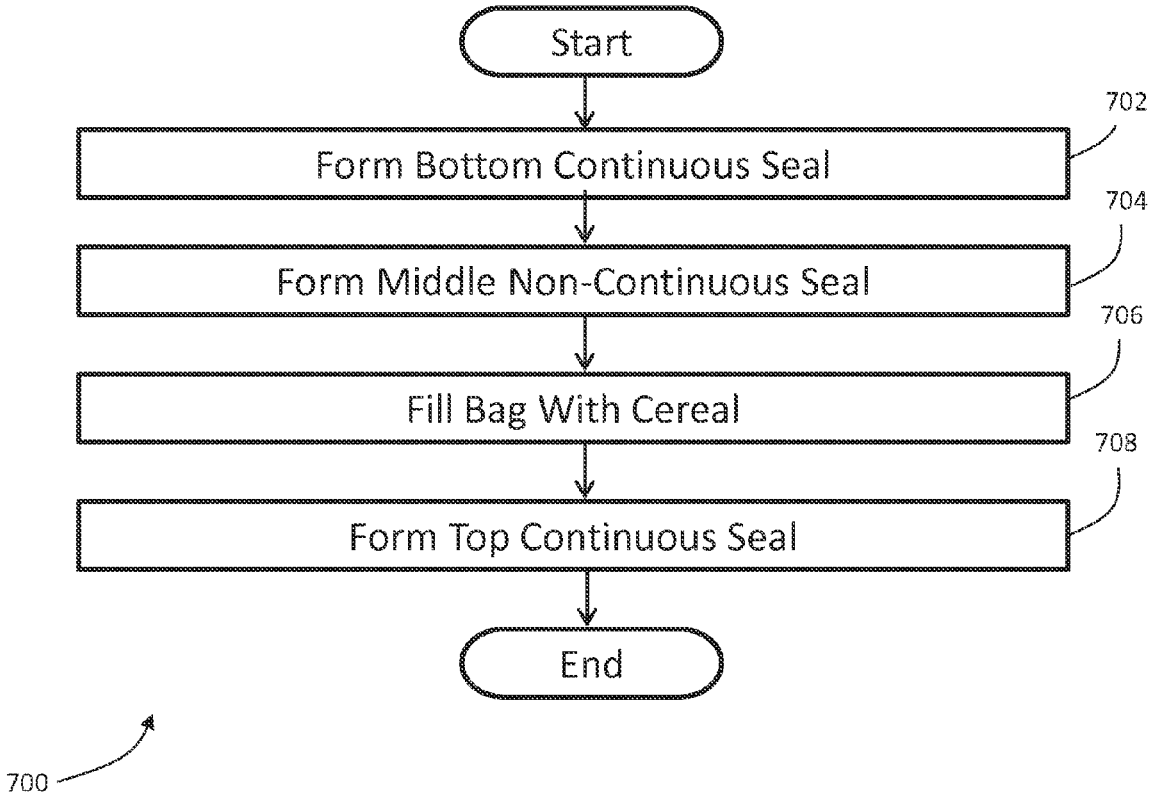
Start
Form Bottom Continuous Seal
Form Middle Non-Continuous Seal
Fill Bag With Cereal
Form Top Continuous Seal
End
702
704
706
708
700

Fig. 7

CEREAL BAG WITH CRUMB COLLECTOR

FIELD OF INVENTION

The present disclosure relates to the field of packaging. More particularly, the present disclosure relates to a bag for packaging cereal and collecting crumbs.

BACKGROUND

Cereal is commonly packaged in a plastic bag for sale to a consumer. In one example, the bag may be packaged inside a box as well for added support. When consuming cereal, the bag, or the box containing the bag, is tilted at an angle in order to allow for the cereal to poor out of the bag and into a bowl. When the desired amount of cereal is received in a bowl, the bag is returned to an upright position.

Cereal may be brittle and therefore some of the cereal in the bag may break up into small pieces and crumbs when the bag is handled, moved, or tilted. In addition, cereal may be coated in sugar or other coatings, some of which may separate from the cereal when the bag is moved or tilted. The cereal pieces and sugar (hereinafter collectively referred to as "crumbs") accumulate at the bottom of the cereal bag. When the bag is tilted to poor the cereal into a bowl, some of the crumbs may also spill into the bowl. It may not be desirable, however, to have crumbs in a bowl of cereal.

SUMMARY

A bag includes a main compartment and a crumb collector compartment disposed below the main compartment. The bag includes a substantially horizontal non-continuous seal including a plurality of sealed portions and a plurality of open portions disposed between the sealed portions. The substantially horizontal non-continuous seal is disposed between the main compartment and the crumb collector compartment. The bag includes a continuous seal disposed below the crumb collector compartment.

A cereal bag includes a top compartment and a bottom compartment disposed below the top compartment. The cereal bag includes a non-continuous seal including a plurality of sealed portions and a plurality of open portions disposed between the sealed portions. The non-continuous seal is disposed between the top compartment and the bottom compartment.

In a method for manufacturing a cereal bag with a crumb collector, a continuous first seal is formed substantially horizontal along a bottom of a cereal liner. A non-continuous second seal is formed substantially horizontal along a middle portion of the cereal liner, at an offset distance above the first seal. The cereal liner is filed with cereal. A continuous third seal is formed substantially horizontal along a top of the cereal liner.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings, structures are illustrated that, together with the detailed description provided below, describe example embodiments of the claimed invention. Where appropriate, like elements are identified with the same or similar reference numerals. Elements shown as a single component may be replaced with multiple components. Elements shown as multiple components may be replaced with a single component. The drawings may not be to scale. The proportion of certain elements may be exaggerated for the purpose of illustration.

FIG. **1** illustrates an example cereal bag with crumb collector.

FIG. **2** illustrates an example cereal bag with crumb collector.

FIG. **3** illustrate an example cereal bag with crumb collector.

FIG. **4** illustrates an example cereal apparatus for filling a cereal bag with cereal and sealing the cereal bag.

FIG. **5** illustrates an example cereal apparatus for filling a cereal bag with cereal and sealing the cereal bag.

FIG. **6**A illustrates an example heat plate for creating a non-continuous seal.

FIG. **6**B illustrates an example heat plate for creating a non-continuous seal

FIG. **7** illustrates a flow chart of an example method for creating a cereal bag with crumb collector.

DETAILED DESCRIPTION

A cereal bag described herein allows for separation of crumbs from cereal and prevents crumbs from spilling into a bowl together with cereal. It should be understood that although the examples described herein refer to cereal and separating cereal crumbs, the bag can be used to package any food that is brittle and may produce crumbs inside a bag, wherein it may not be desirable to consume the crumbs together with the food.

FIG. **1** illustrates an example cereal bag **100** for separating crumbs. Cereal bag **100** includes a top or main compartment **102** for storing cereal. Cereal bag **100** also includes a bottom or crumb collector compartment **104**, positioned below the main compartment **102**, that collects and stores crumbs as they separate from cereal in the main compartment **102**. The crumb collector compartment **104** also prevents crumbs from re-mixing with the cereal when the cereal is being poured into a bowl.

FIG. **2** illustrates a close-up view of the crumb collector compartment **104** positioned below the main compartment **102** of cereal bag **100** illustrated in FIG. **1**. Cereal bag **100** includes a bottom seal **202** extending substantially horizontally across the bottom of cereal bag **100**. Bottom seal **202** is continuous and therefore prevents cereal or any other contents from falling out from the bottom of cereal bag **100**.

Cereal bag **100** further includes a middle seal **204** extending substantially horizontally across the cereal bag **100**, at an offset distance above the bottom seal **202**. For example, middle seal **204** can be positioned approximately one inch above the bottom seal **202**. The middle seal **204** separates main compartment **102** from crumb compartment **104**. It should be understood that middle seal **204** can be disposed at any suitable distance above bottom seal **202** in order to create a smaller or bigger crumb compartment **104**.

Middle seal **204** is non-continuous. That is, the middle seal **204** includes several closed or sealed portions **206** which prevent larger objects such as whole pieces of cereal from moving into the crumb compartment **104** and several open portions **208** or slots which create small pathways for allowing crumbs to pass through into the crumb compartment **104**. It should be appreciated that the size or length of the open portions **208** can vary depending on the contents to be stored in the cereal bag **100**. For example, a cereal bag **100** that is designed to store large cereal may include a middle seal **204** with larger open portions **208** but a cereal bag **100** designed to store smaller cereal may include a middle seal **204** with smaller open portions **208**. In addition, the number of open portions **208** may vary depending on how much filtering or separation is desired. For example, a middle seal **204** with a

greater number of open portions **208** may be used to separate a greater amount of crumbs while a middle seal **204** with a smaller number of open portions **208** may be used to separate less crumbs.

In order to prevent crumbs from spilling back into the main compartment **102** when a cereal bag **100** is tilted towards a side, the outer-most sealed portions **210** of the middle seal **204** are extended in length as compared to the inner sealed portions **206**. In one example, the outer-most sealed portions **210** are angled downward (not shown) towards the middle of the middle seal **204** in order to further facilitate crumbs being separated into the crumb compartment **104** and to prevent crumbs from falling back into main compartment **102** when the cereal bag **100** is tilted towards a side.

It may be desirable to consume the crumbs in crumb collector **104** separately from the cereal stored in main compartment **102**. Accordingly, in one example as illustrated in FIG. **3**, crumb compartment **104** includes a perforated portion **302** extending between a first side wall of the crumb collector compartment **104** and a bottom of the cereal bag **100**. This allows for crumbs to be poured from the crumb compartment **104** separate from cereal being poured from main compartment **102**.

FIG. **4** illustrates an example cereal apparatus **400** for filling a cereal bag **100** with cereal and sealing the cereal bag **100**. A plastic material **402** is fed into cereal apparatus **400** where it is cut and sealed at sealing station **404** before being filled with cereal.

FIG. **5** illustrates a close-up view of sealing station **404** of the cereal apparatus **400** of FIG. **4**. Sealing station **404** includes a first sealing apparatus **502** and a second sealing apparatus **504**. First sealing apparatus **502** is configured to form a substantially horizontal continuous bottom seal **202** by applying heat along a continuous line along the plastic **402** to create a bottom of cereal bag **100**. Second sealing apparatus **504** is configured to form a substantially horizontal non-continuous middle seal **204** at an offset above the bottom seal **202**. It should be appreciated that the position of the first sealing apparatus **502** in relation to the second sealing apparatus **504** may be adjusted in order to vary the offset between the bottom seal **202** and the middle seal **204**.

It should be appreciated that although the two seals **202** and **204** are described as being formed by two separate components, the first and second sealing apparatuses **502** and **504** that move independently of one-another, the two seals may also be formed by a single component (not shown). For example, a sealing apparatus configured to form a substantially horizontal continuous bottom seal may be include an extension or add-on that also forms a substantially horizontal non-continuous seal at an offset above the continuous seal. Thus, the two seals **202** and **204** can be formed simultaneously as a result of a single component applying heat to two different locations on a cereal bag.

In order to form bottom and middle seals **202** and **204**, first and second sealing apparatuses **502** and **504** include heat plates for applying heat to the plastic. Applying heat causes the plastic to melt together and form a seal along the points of contact with the heat plates. Accordingly, a first heat plate (not shown) of the first sealing apparatus **502** is configured to make continuous contact with the plastic **402** along a horizontal line in order to form a continuous seal.

A second heat plate **600** of the second sealing apparatus **504**, as illustrated in FIG. **6**A, is configured to make non-continuous contact with the plastic **402**. In particular, the second heat plate **600** has a series of protruding ridges **602** separated by a series of recessed gaps **604**. When the second heat plate **600** is pressed against the plastic **402**, the protruding ridges **602** make contact with the plastic **402** and thus create sealed portions **206** which prevent cereal from falling into the crumb compartment **104**. The recessed gaps **604** in the second heat plate **600** create spaces were no heat is applied to the plastic when the second heat plate **600** is pressed against the plastic **402**. This allows for open portions **208** or slots to be formed in between the sealed portions **206** which create small pathways for allowing crumbs to pass through into the crumb compartment **104**.

The second heat plate **600** includes outer protruding ridges **606** that are wider than the protruding ridges **602** in order to create outer-most sealed portions **210** having extended lengths as compared to the inner sealed portions **206**.

It should be appreciated that the protruding ridges **602** can be any suitable width. It should be further appreciated that the recessed gaps **604** can be any suitable width. It should also be appreciated that the second heat plate **600** may include any suitable number of protruding ridges **602** and recessed gaps **604**. For example, as illustrated in FIG. **6**B, a heat plate **608** can include recessed gaps **612** that are wider than the protruding ridges **610**.

Referring back to FIG. **5**, it should be appreciated that the first and second sealing apparatuses **502** and **504** can be configured to create bottom and middle seals **202** and **204** respectively, either simultaneously or sequentially.

FIG. **7** illustrates a flow chart of an example method for creating a cereal bag with crumb collector **100**. At step **702**, a first sealing apparatus **502** forms a continuous bottom seal **202** substantially horizontal along the bottom of cereal bag **100**.

At step **704**, a second sealing apparatus **504** forms a non-continuous middle seal **204** substantially horizontal along the middle portion of the cereal bag **100**, at an offset above the bottom seal **202**.

At step **706**, the cereal bag **100** is filed with cereal. At step **708**, a continuous seal is formed at the top of the cereal bag **100**.

In one example, the method further includes the step of inserting the cereal bag **100** or liner into a cereal box (not shown). The box can be cardboard, paper, or any suitable material for packaging the bag of cereal. In on example, an adhesive or another suitable support means can be applied between the cereal bag **100** and the box to hold the cereal bag **100** at a desired position inside the box in order to support the cereal bag **100** and to prevent the main compartment **102** of the cereal bag **100** from settling onto the crumb compartment **104** under its own weight, thereby preventing crumbs from effectively passing into the crumb compartment **104**.

While example systems, methods, and so on, have been illustrated by describing examples, and while the examples have been described in considerable detail, it is not the intention to restrict or in any way limit the scope of the appended claims to such detail. It is simply not possible to describe every conceivable combination of components or methodologies for purposes of describing the systems, methods, and so on. With the benefit of this application, additional advantages and modifications will readily appear to those skilled in the art. The scope of the invention is to be determined by the appended claims and their equivalents.

To the extent that the term "includes" or "including" is used in the specification or the claims, it is intended to be inclusive in a manner similar to the term "comprising" as that term is interpreted when employed as a transitional word in a claim. Furthermore, to the extent that the term "or" is employed (e.g., A or B) it is intended to mean "A or B or both." When the applicants intend to indicate "only A or B but not both" then the term "only A or B but not both" will be employed. Thus,

use of the term "or" herein is the inclusive, and not the exclusive use. See, Bryan A. Garner, A Dictionary of Modern Legal Usage 624 (2d. Ed. 1995). Also, to the extent that the terms "in" or "into" are used in the specification or the claims, it is intended to additionally mean "on" or "onto." Furthermore, to the extent the term "connect" is used in the specification or claims, it is intended to mean not only "directly connected to," but also "indirectly connected to" such as connected through another component or components.

The invention claimed is:

1. A bag, comprising:

a main compartment;

a crumb collector compartment, disposed below the main compartment, wherein the crumb collector compartment comprises a perforated portion extending diagonally between a first side wall of the crumb collector compartment and a bottom of the bag;

a substantially horizontal non-continuous seal disposed between the main compartment and the crumb collector compartment, wherein the substantially horizontal non-continuous seal comprises a plurality of sealed portions extending across the bag wherein the bag is melted together at each of the sealed portions, and a plurality of open portions wherein each of the open portions is disposed across the bag between the sealed portions and within the substantially horizontal non-continuous seal, and wherein the sealed portions comprise outer-most sealed portions, wherein each of the outer-most sealed portions is disposed at an end of the substantially horizontal non-continuous seal, and wherein the outer-most sealed portions extend along extended lengths that are greater than lengths of the sealed portions disposed between the outer-most sealed portions; and

a continuous seal disposed below the crumb collector compartment.

2. A cereal bag comprising:

a top compartment;

a bottom compartment disposed below the top compartment, wherein the bottom compartment comprises a perforated portion extending diagonally between a first side wall of the bottom compartment and a bottom of the cereal bag;

a non-continuous seal comprising a plurality of sealed portions extending across the cereal bag wherein the cereal bag is melted together at each of sealed portions, and a plurality of open portions wherein each of the open portions is disposed across the cereal bag between the sealed portions and within the non-continuous seal, and wherein the non-continuous seal is disposed between the top compartment and the bottom compartment and wherein the sealed portions comprise outer-most sealed portions, wherein each of the outer-most sealed portions is disposed at an end of the non-continuous seal, and wherein the outer-most sealed portions extend along extended lengths that are greater than lengths of the sealed portions disposed between the outer-most sealed portions.

3. A method for manufacturing a cereal bag with a crumb collector, comprising the steps of:

forming a continuous first seal substantially horizontal along a bottom of a cereal liner;

providing a heat plate comprising a plurality of protruding ridges;

making non-continuous contact between the cereal liner and the plurality of protruding ridges of the heat plate;

melting the cereal liner with the heat plate to form a non-continuous second seal substantially horizontal along a middle portion of the cereal liner at an offset distance above the first seal, the non-continuous second seal comprising a plurality of sealed portions wherein the sealed portions comprise outer-most sealed portions, wherein each of the outer-most sealed portions is disposed at an end of the non-continuous second seal, and wherein the outer-most sealed portions extend along extended lengths that are greater than lengths of the sealed portions disposed between the outer-most sealed portions;

filing the cereal liner with cereal; and

forming a continuous third seal substantially horizontal along a top of the cereal liner, wherein the cereal liner comprises a perforated portion extending diagonally between a side wall and the bottom of the cereal liner.

4. The method of claim **3**, wherein the cereal liner comprises plastic.

5. The method of claim **3**, further comprising the steps of:

inserting the cereal liner comprising the cereal into a cereal box; and

applying an adhesive between the cereal liner and the cereal box.

* * * * *